

Prescribed Fire Program

The role of fire throughout North Carolina's ecosystems over the last 10,000 years has been well documented. These fires were caused primarily by lightning, and fire history studies have established a long record of repeated fires of varying scale and intensity. Ecosystems that have been exposed to such fires typically exhibit high biodiversity, and many of these species are known to be dependent on fire for survival and reproduction. North Carolina is known to support a wide variety of plant and animal species that respond vigorously to fire. In fact, approximately 65% of the nearly 700 rare plant species that occur in North Carolina are known to be fire-dependent. Common plant adaptations that allow for survival in the face of repeated fires include thick bark and leaves; resprouting via underground stems; long-lived seed banks in the soil; and cones that open only in the event of extreme fires.

Many state parks support natural communities that are dependent on frequent fire for maintenance and propagation. In the long-term absence of fire, these natural communities will be altered so that they no longer support their characteristic native species. Because of decades of complete fire suppression, many fire-adapted ecosystems in state parks have been degraded. One result of this is that both common and rare fire-dependent species have been lost. Another result is that heavy concentrations of woody fuels have accumulated, and unusually intense fires can occur.

A well-planned fire management program is critical for properly managing these ecosystems, and the division manages these resources through the application of prescribed fire. Under this program, fires are deliberately ignited under carefully prescribed conditions using techniques that will achieve specific management goals. The primary long-term goals in of the fire management program are to restore and maintain high-quality examples of fire-adapted ecosystems across the state parks system. Prescribed fires are also used to reduce hazardous fuel levels, enhance habitat for rare species, and control or eliminate non-native species.

To help achieve these goals, the Natural Resources Program has prepared the division's fire management guidelines and has developed specific, ecologically-based fire management plans for over 20 parks. The program also coordinates fire management training for division staff, including workshops on fire management and fire ecology.

Most of the division's fire management occurs in the coastal plain; however, additional fire-adapted areas continue to be identified, and the division has expanded its fire management program to the Piedmont and mountain regions.

What are the benefits of prescribed burns?

Prescribed burns achieve the same effects as natural fires. Below are some of the benefits

North Carolina Division of Parks & Recreation

Prescribed Fire Program

of prescribed burns:

By burning dead leaves on the forest floor, small twigs and branches, pine needles, and grasses, the prescribed burn returns nutrients to the soil. This natural fertilizer is particularly important in replenishing areas that were once used as farmland, where decades ago crops depleted the nutrients from the soil.

Prescribed burns also control competing plants that inhibit the growth of native plants. For example, historical records noted that a rare type of sumac grew on areas of what is now William B. Umstead State Park. This sumac thrived where frequent natural fires occurred because the fires controlled plants that would have shaded the sumac and inhibited its growth. Now, the sumac is all but gone from park property because humans have prevented natural fires for so long. Only recently was the sumac replanted in the park.

Some grasses and berry species need open space for germination. Such open space can be created by fire. Grasses and berry species are a popular food source for animals. When these plants are more abundant, they support more animals and a greater diversity of animals.

In addition, prescribed burns reduce the chance of an uncontrollable forest fire. Prescribed fires burn “forest fuels”—natural litter such as dead leaves, fallen tree branches and pine needles—under controlled circumstances. If these fuels are allowed to build up, they can make a natural fire more difficult to contain.

How do rangers conduct a prescribed burn?

The first step is to identify the park's fire-adapted natural community types and to document their fire history and fire ecology. Once the areas to be burned have been identified, then each park's fire management plan outlines specific short- and long-term fire management goals. This helps rangers determine when and how frequently certain areas are burned. Every area to be burned is given its own “prescription” that establishes the weather conditions under which that area can—and cannot—be burned.

On the day of the burn, rangers evaluate the temperature, humidity, wind direction and speed, and other factors that might influence the fire. If weather conditions are favorable, the rangers set a small fire, testing an area of the land to be burned.

After studying how the fire reacts, and determining that the area can be burned safely, rangers continue with the prescribed burn.

Once the burn is complete, rangers patrol the entire unit and conduct mop up operations to ensure that the fire is out.

Prescribed Fire Program

What about after the fire?

Although the landscape may look dramatically different right after the fire, the post-fire response is usually very rapid. Within days of the fire, grasses and other herbaceous species will resprout from their roots. Seeds that have been stimulated by the heat will germinate, and all of the plant species will benefit from the ash, which contains recycled nutrients and acts as a fertilizer. Canopy tree will usually be unaffected except in cases of extremely hot fire.

Most animal species are also well-adapted to fire. Mammals and birds will simply leave during the fire and then return. Most reptiles and amphibians will survive by leaving the area or moving into dens. After the fire, plant abundance and diversity usually increase, causing increased animal diversity. Bird diversity usually increases in response to increased insect populations that arrive to feed on trees.